

ABBREVIATIONS

AD	ACCESS DOOR
AT	ABOVE FINISHED FLOOR
AL	ACOUSTICAL LINING
BO	BLANK OFF
BR	BOTTOM REGISTER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
DN	DOWN
FC	FLEXIBLE CONNECTION
FD	FLOOR GRILLE
FT	FEET
GPM	GALLONS PER MINUTE
MBH	THOUSAND BTU PER HOUR
NC	NOT IN THIS CONTRACT
NTS	NOT TO SCALE
ON	OUTSIDE AIR INTAKE
UH	UNIT HEATER
RPM	REVOLUTION PER MINUTE
SA	SOUND ATTENUATOR
SM	SHEET METAL
WMS	WIRE MESH SCREEN

PIPING SYMBOLS

---	EXISTING PIPE TO REMAIN
----	EXISTING PIPE TO BE REMOVED
---	ANCHOR
---	FUEL OIL GAUGE LINE
---	FUEL OIL RETURN
---	FUEL OIL FILL
---	FUEL OIL SUPPLY
---	FUEL OIL VENT LINE
---	LOW PRESSURE CONDENSATE RETURN
---	LOW PRESSURE STEAM
---	FUEL FILTRATION SUPPLY
---	FUEL FILTRATION RETURN
---	FLOAT AND THERMOSTATIC STEAM TRAP
---	ARROW INDICATES DIRECTION OF FLOW
---	PIPE GUIDE
---	UNION
---	PIPE UP
---	PIPE DOWN
---	"A" LEG
---	"Y" TYPE STRAINER WITH BLOW OFF VALVE
---	PITCH PIPE IN DIRECTION OF ARROW
---	LOW PRESSURE DRIP TRAP ASSEMBLY

VALVES AND GAUGES

---	GLOBE VALVE
---	GATE VALVE
---	CHECK VALVE
---	AUTOMATIC TWO WAY CONTROL VALVE
---	ELECTRIC CONTROL VALVE
---	RELIEF VALVE
---	PRESSURE OR VACUUM GAUGE WITH COCK
---	DUPLEX STRAINER
---	THERMOSTAT, PNEUMATIC
---	LOW PRESSURE TRAP RIG
---	BALL VALVES
---	CONVENTION FLOAT AND THERMOSTATIC TRAP
---	BLOCK VENT
---	FUSIBLE LINK FIRE SHUTOFF VALVE

SHEETMETAL SYMBOLS

---	SUPPLY DUCT UNDER POSITIVE PRESSURE
---	SUPPLY DUCT NEGATIVE POSITIVE PRESSURE
---	ACCESS DOOR IN DUCT
---	SMOKE DETECTOR HEAD IN DUCT
---	DUCT SIZE (FIRST SIZE INDICATES PLAN SIZE)
---	DUCT FLEXIBLE CONNECTION
---	MOTORIZED DAMPER
---	ACOUSTIC LINING DUCTWORK
---	SQUARE FEET

MECHANICAL

A. GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO PERFORM ALL WORK NECESSARY TO FURNISH, INSTALL, STORE, STAGE, REMOVE AND INSTALL EQUIPMENT, APPURTENANCES, MATERIALS AND SERVICES TO MAKE INSTALLATION COMPLETE, FUNCTIONAL AND OPERABLE TO THE SATISFACTION OF THE ENGINEER.
2. AS PART OF THIS CONTRACT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF CERTAIN EQUIPMENT, APPURTENANCES AND MATERIALS WHICH WILL BE FURNISHED BY THE PORT AUTHORITY (PA), AS DELINEATED ON THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT, VALVES, ACTUATORS, CONTROL WIRING, CONTROL DEVICES, RACKS, SUPPORTS, VIBRATION ISOLATORS, ETC. AS PER THE MANUFACTURERS' VENDOR'S RECOMMENDATIONS.
3. THE CONTRACTOR SHALL INCORPORATE ALL PERTINENT INFORMATION OF THE PA FURNISHED EQUIPMENT IN HIS SHOP DRAWINGS AND SUBMIT TO THE ENGINEER FOR APPROVAL. SUCH INFORMATION SHALL INCLUDE BUT NOT LIMITED TO THE DIMENSIONS, LOCATIONS, CONNECTION DETAILS, INSTALLATION DETAILS, FUNCTIONS, CONTROLS, ELECTRICAL WIRING AND POWER REQUIREMENTS FOR EACH PIECE OF EQUIPMENT WIRING TERMINATIONS.
4. THE CONTRACTOR SHALL COORDINATE WITH THE VENDORS OF THE PA FURNISHED EQUIPMENT FOR THE PURPOSE OF DELIVERY, RIGGING AND PROPER HANDLING AND INSTALLATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO ACQUIRE THE NECESSARY TECHNICAL SUPPORT FROM THE APPLICABLE MANUFACTURER(S) TO ENSURE PROPER INSTALLATION TO SATISFY THE OPERATIONAL AND FUNCTIONAL REQUIREMENTS OF ALL EQUIPMENT AND COMPONENTS INSTALLED BY HIM UNDER THIS CONTRACT.
5. THE CONTRACTOR SHALL INSPECT, AND IF ACCEPTABLE, APPROVE ALL EQUIPMENT AND MATERIALS PROVIDED BY THE PA PRIOR TO HANDLING, STORING AND INSTALLING.
6. REFER TO THE CONTRACT SPECIFICATIONS FOR THE LIST OF REFERENCE DOCUMENTS PERTAINING TO THE SPECIFICATIONS OF THE EQUIPMENT, APPURTENANCES AND MATERIALS FURNISHED BY THE PA.
7. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITIES FOR THE LOSS OR DAMAGE OF ANY OF THE PA FURNISHED EQUIPMENT DUE TO HIS NEGLIGENCE. THE CONTRACTOR SHALL REPAIR OR REPLACE SUCH EQUIPMENT TO THE SATISFACTION OF THE ENGINEER, PLUS LOCATED DAMAGES FOR ANY DELAY TO THE CONTRACT SCHEDULE RESULTED FROM THE LOSS OF DAMAGE.
8. THE CONTRACTOR SHALL SUBMIT DETAILED CONSTRUCTION PHASING PLAN PRIOR TO STARTING THE WORK TO BE PERFORMED UNDER THIS CONTRACT, INCLUDING THE SCHEDULING OF THE WORK, MATERIALS AND EQUIPMENT. SUCH PLAN SHALL INCLUDE ALL TEMPORARY STRUCTURES AND EQUIPMENT NECESSARY FOR THE PROPER HANDLING OF THE MATERIALS AND EQUIPMENT WITH THE RISK OF DAMAGING ANY STRUCTURE, EQUIPMENT OR PERSONNEL.
9. THE CONTRACTOR SHALL PROVIDE ALL PIPE HANGERS AND EQUIPMENT SUPPORTS TO COMPLY WITH SEISMIC RESTRAINTS REQUIRED BY LOCAL LAW 1795.
10. ALL MECHANICAL AND ELECTRICAL WORK SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE AND SHALL MEET ALL LOCAL CODES AS STATED BELOW. ALL DEFECTS, WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR OWNER AT NO ADDITIONAL COST. UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL EXCESS MATERIALS, SURPLUS MATERIAL AND SCRAP LEAVING THIS WORK IN PERFECT CONDITION.

B. NOTICE TO BIDDERS

1. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS UPON WHICH THE CONTRACTOR SHALL SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR PROVISIONS.
2. WHEN CONFLICTS OCCUR IN THE SPECIFICATIONS OR ON THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
3. THE CONTRACTOR SHALL PROVIDE ALL ITEMS OF LABOR OR MATERIALS SPECIFICALLY INDICATED, OR REQUIRED TO COMPLETE THE INTENDED INSTALLATIONS.
4. THE CONTRACTOR SHALL COORDINATE HIS WORK IN ORDER THAT CONFLICTS IN SPACE LOCATIONS DO NOT OCCUR.
5. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE, AND SHALL REPLACE AND SHALL REPAIR TO A MODULAR SYSTEMS BECOMES NECESSARY. SHUTDOWN TIME SHALL BE KEPT TO A MINIMUM.
6. ALL WORK IN OCCUPIED TENANT AREAS SHALL BE PERFORMED ON OTHER THAN NORMAL WORKING HOURS OR SCHEDULED AS DIRECTED BY THE OWNER.
7. THE CONTRACTOR SHALL NOTIFY THE OWNER WHEN SHUTDOWN OF EXISTING SYSTEMS BECOMES NECESSARY. SHUTDOWN TIME SHALL BE KEPT TO A MINIMUM.
8. THE CONTRACTOR WILL BE HELD TO HAVE VISITED THE SITE AND EXAMINED THE DRAWINGS AND SPECIFICATIONS OF OTHER TRADES AND OF GENERAL CONSTRUCTION TRADES TO SATISFY HIMSELF OF ALL CONDITIONS AFFECTING THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS GIVEN ON THE DRAWINGS AND THOROUGHLY ACCQUANT HIMSELF WITH ALL EXISTING CONDITIONS AFFECTING THE PROPER INSTALLATION OF HIS WORK.
9. THE WORK UNDER THIS CONTRACT SHALL BE PERFORMED AND COORDINATED SIMULTANEOUSLY WITH WORK OF OTHER TRADES SO AS NOT TO DELAY THE OVERALL PROGRESS OF WORK.

C. SHOP DRAWING & EQUIPMENT SUBMISSIONS

1. ONE SET OF SEPARATE DUCTWORK, PIPING LAYOUT AND CERTIFIED EQUIPMENT MANUFACTURERS DATA SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO ORDERING OR PURCHASE. SUBMIT THREE SETS OF CATALOG CUTS FOR MISC. ACCESSORIES, ETC.
2. COORDINATE WITH THE WORK OF OTHER TRADES.
3. AIR BALANCING AND TESTING. SUBMIT REPORT AS SPECIFIED.
4. SHOP DRAWINGS SHALL BE 3/8" = 1'-0" SCALE.
5. SUBMIT AIR HANDLER UNIT HANGING DETAILS.

D. RECORD DRAWINGS

1. A REPRODUCIBLE RECORD DRAWING SHALL BE SUPPLIED UPON WHICH CORRECTIONS HAVE BEEN MADE TO PROVIDE AN ACCURATE AND COMPLETE RECORD OF THE WORK AS INSTALLED. A REPRODUCIBLE COPY OF THIS DRAWING SHALL BE PROVIDED TO THE OWNER ONCE THE INSTALLATION IS COMPLETE.

E. CODES, PERMITS AND INSPECTION

1. ALL WORK SHALL MEET OR EXCEED THE LATEST REQUIREMENT OF THE NEW YORK CITY BUILDING CODE, NATIONAL ELECTRICAL CODE, THE NFPA AND OTHER AUTHORITIES EXERCISING JURISDICTION OF THE WORK OF THIS PROJECT.
2. COMPLY WITH APPLICABLE UTILITY COMPANY RULES AND REGULATIONS.
3. COMPLY WITH OCCUPATIONS SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS.
4. SECURE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES AND TRANSMIT SAME TO THE OWNER AT THE COMPLETION OF THE WORK.

F. GUARANTEES

1. ALL WORK SHALL BE GUARANTEED TO BE FREE FROM LEAKS OR OTHER DEFECTS. ALL DEFECTIVE MATERIAL OR WORKMANSHIP AS WELL AS DAMAGES TO THE WORK SHALL BE REPLACED AND REPAIRED. ALL TRADES RESULTING FROM SAME SHALL BE REPLACED OR REPAIRED FOR THE DURATION OF THE GUARANTEE PERIOD.
2. THE GUARANTEE PERIOD SHALL BE FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE, WHICH SHALL BE THE DATE OF FINAL PAYMENT OR THE DATE OF FORMAL NOTICE OF ACCEPTANCE, WHICHEVER IS EARLIER.
3. CERTIFICATION SHALL BE FOR ONE (1) YEAR FROM THE DATE OF ACCEPTANCE, WHICH SHALL BE THE DATE OF FINAL PAYMENT OR THE DATE OF FORMAL NOTICE OF ACCEPTANCE, WHICHEVER IS EARLIER.

G. REMOVALS AND ALTERATIONS

1. THE CONTRACTOR SHALL REMOVE, RELOCATE, REPLACE, ADJUST, ADAPT AND MODIFY EXISTING EQUIPMENT AND/OR SYSTEMS AS REQUIRED BY THE DRAWINGS OR SPECIFICATION, AND AS MAY BE REQUIRED WHEN THE COMPLETION OF WORK IN THE CONTRACT OR OTHER CONTRACT WORK OF THE PROJECT.
2. ALL REMOVED EQUIPMENT AND MATERIAL SHALL BE REMOVED FROM THE PROJECT SITE.

H. WORK INCLUDE UNDER OTHER SECTIONS OF WORK

1. ITEMS OF WORK WHICH SHALL BE INCLUDED UNDER OTHER SECTIONS OF WORK ARE AS FOLLOWS:
 - A) ELECTRICAL WIRING FOR POWER.
 - B) PROVISION OF ELECTRICAL DISCONNECT SWITCHES OR FUSES (UNLESS FURNISHED INTEGRALLY WITH EQUIPMENT).

I. FUEL HANDLING SYSTEMS

1. DESCRIPTION
 - A) PROVIDE FUEL OIL HANDLING SYSTEMS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. WORK INCLUDED
 - A) FIELD FABRICATED FUEL OIL RECTANGULAR STORAGE TANKS.
 - B) FUEL OIL MANAGEMENT SYSTEM AND LEVEL CONTROL CENTER
 - C) MAIN TANK GAUGE AND LEAK MONITORING SYSTEM
 - D) FUEL OIL PUMPING AND STRAINING SET
 - E) FILTRATION, DENSITATING AND FUEL STABILIZATION SYSTEM
 - F) 18" HEADER SYSTEM
 - G) FUEL OIL SPECULATES
 - H) PIPING, VALVES AND ACCESSORIES, SPECIFICATION SECTION 15003.
 - I) UNDERGROUND PIPING SPECIFICATION SECTION 15003.
3. SUBMITTALS
 - A) SUBMIT FULL TECHNICAL RATING DATA, CATALOG CUTS, MODEL NUMBERS, DIMENSIONAL INSTALLATION DETAILS, PIPING, CONSTRUCTION DETAILS, PIPING DETAILS, WIRING DIAGRAMS AND INSTALLATION INSTRUCTIONS.
 - B) SUBMIT SHOP DRAWINGS OF THE FIELD FABRICATED TANK FOR APPROVAL. THE SHOP DRAWINGS SHALL INDICATE THE SIZE, CONSTRUCTION DATA, REINFORCEMENT DETAILS, LARGER INSTALLATION, ALL DETAILS OF ANGLE IRON BRACKETS AND RIVETING, LOCATE ALL WELD JOINTS, TAPPING CONNECTION AND LOCATION OF THE TAPPINGS.
 - C) SYSTEM VENDOR SHALL COORDINATE PRODUCT DATA PRESENTED BY LEAK MONITORING SYSTEM AND FUEL MANAGEMENT SYSTEM AND FIELD FABRICATED TANKS TO PROVIDE A COMPREHENSIVE SET OF INTERFACED DRAWINGS WHICH WILL SERVE AS THE BASIS FOR SYSTEM EVALUATION BY THE ENGINEER AND INSTALLATION BY MECHANICAL CONTRACTOR DESIGNATED BY THE OWNER.

J. PRODUCTS

1. FIELD FABRICATED FUEL OIL RECTANGULAR STORAGE TANKS
 - A) PROVIDE FUEL OIL STORAGE TANKS OF SIZE AND CAPACITY AS INDICATED ON THE PLANS. TANKS SHALL BE OF RECTANGULAR CONSTRUCTION AND SHALL BE PROVIDED WITH A 24" DIAMETER MANHOLE IN THE TOP. TANK SHALL BE PROVIDED WITH PIPE TAPPINGS FOR FILL, RELIEF, VENT, RETURN SUPPLY TO TRANSFER PUMPS, GARAGE OVERFILL ALARM, AND TWO (2) 2" SPARES. TANKS SHALL BE CONSTRUCTED OF 5/16" THICK WELDED PLATE STEEL. CORNERS MAY BE MADE UP BY BENDING THE PLATES OR BY USING ANGLES. MANHOLE RIVET DIAMETER IN SEAMS SHALL BE 5/8" AND SURFACES OF RECTANGULAR TANKS SHALL BE BRACED BY STRUCTURAL MEMBERS OR ROGS, WHEN STRUCTURAL MEMBERS ARE USED, THE RIVET PITCH SHALL NOT EXCEED SIX INCHES.
 - B) PAINT EXTERIOR OF TANKS WITH 1 COAT OF BITUMASTIC.
 - C) PROVIDE STEEL LADDERS INSIDE AND OUT FOR EACH RECTANGULAR TANK.
 - D) MANHOLE COVER TO BE PROVIDED WITH BRASS BOLTS AND METALLIC GASKETS.
 - E) ALL OPENINGS SHALL BE THROUGH THE TOP OF THE TANKS.
 - F) PROVIDE ANGLE BRACKETS WELDED TO SIDES OF THE TANK TO ANCHOR THE TANKS TO THE CURB. PROVIDE AND COORDINATE THE ANCHOR DETAILS WITH THE CONCRETE SUBCONTRACTOR.
 - G) RECTANGULAR TANKS TO BE BUILT IN COMPLIANCE WITH NEW YORK CITY BUILDING CODE REGULATIONS.
 - H) HYDROSTAT TANKS TO 25 PSI FOR A ONE-HOUR DURATION AND WITNESSED BY THE ENGINEER AND P.A. REPRESENTATIVE.
 - I) SUBMIT SHOP DRAWINGS OF THE TANK FOR APPROVAL. THE SHOP DRAWINGS SHALL INDICATE THE SIZE, CONSTRUCTION DATA, TAPPING CONNECTIONS AND LOCATION OF THE TAPPINGS.
 - J) PROVIDE FABRICATORS WARRANTY FOR ONE (1) YEAR FROM DATE OF OWNERS ACCEPTANCE OF FUEL OIL SYSTEM, AGAINST FAULTY MATERIAL OR WORKMANSHIP.
2. FUEL OIL SPECULATES
 - A) FILL LINE: STORAGE TANK FILL LINE SHALL TERMINATE IN A GALVANIZED, CAST IRON FILL BOX WITH THREADED BRASS CAP AND OIL TREATED GASKET TO MAKE IT WATERTIGHT. FILL BOX SHALL BE FULL SIZE OF THE PIPE. FILL BOX SHALL BE PROTECTED AT GRADE WITH A WATERPROOF STREET BOX. FILL BOX AND STREET BOX SHALL BE EQUAL TO PREFERRED UTILITIES 1/2" G. CORP. TYPE "W" AND TYPE 12EA RESPECTIVELY.
 - B) VENT LINE: THE VENT LINE SHALL TERMINATE AND BE MOUNTED FLUSH IN THE OUTSIDE WALL WHERE SHOWN ON THE PLANS. 1/2" x 1/2" 3" CAST ALUMINUM VENT BLOCK EQUAL TO PREFERRED UTILITIES.
 - C) FOOT VALVE: PROVIDE ON TANK Suction STUB A 2" BRONZE SINGLE POPPET FOOT VALVE WITH LAPPED-IN SEAT AND 20 MESH MONEL SCREEN. FOOT VALVE SHALL BE EQUAL TO PREFERRED UTILITIES TYPE BOO. PROVIDE AND COORDINATE THE ANCHOR DETAILS WITH THE CONCRETE SUBCONTRACTOR.
 - D) THE FILL AND VENT LINES SHALL BE SUITABLY IDENTIFIED BY ONE-PIECE BRONZE NAME PLATES, APPROXIMATELY 3" X 6" WITH POLISHED RAISED LETTERS AND EQUAL TO PREFERRED UTILITIES MODEL PWP.
 - E) PROVIDE LEAK DETECTION SWITCHES EQUAL TO PREFERRED UTILITIES MODEL PWS-WH FOR THE FOLLOWING POINTS: ONE UNIT IN EACH BOTTOM OF VERTICAL MASONRY FUEL OIL RISER SHAFT AND IN THE BASINS OF THE PUMP SET AND FUEL FILTRATION SET.
 - F) PROVIDE LEAK DETECTION SWITCHES EQUAL TO PREFERRED UTILITIES MODEL HO-A1 LEAK DETECTION SENSOR WITH LEAK DETECTOR TEST POINT TO MONITOR FUEL BUILDUP IN THE SUMP PIT IN THE TANK ROOM. IN THE TWO SUMP PANS IN THE TANK ROOM AND ON ALL FOUR SIDES OF EACH TANK. EACH TANK SHALL CONNECT TO THREE (3) LEAK SENSORS.
 - G) PROVIDE LOW LEVEL SWITCH EQUAL TO MCDONALD & MULLER MODEL 80 TO MONITOR LOW LEVEL OF FUEL IN THE GENERATOR FUEL OIL HEADER PIPE.
 - H) PROVIDE HIGH LEVEL SWITCH EQUAL TO MERCOD MODEL DMH-521-3 TO MONITOR THE HIGH LEVEL OF FUEL IN THE GENERATOR FUEL OIL HEADER PIPE.
 - I) PROVIDE HIGH LEVEL SWITCH EQUAL TO PREFERRED UTILITIES MODEL PLS-1 TO MONITOR HIGH LEVEL IN EACH MAIN FUEL OIL STORAGE TANK.
 - J) PROVIDE MOTORIZED BALL VALVES TO ALLOW THE AUTOMATIC OPERATION OF THE FUEL OIL MANAGEMENT SYSTEM AS DESCRIBED HEREIN:
 - 1) PROVIDE MOTORIZED BALL VALVES, 2" BODY, TO ALLOW THE AUTOMATIC TANK FILL SELECTION OF EITHER OF THE MAIN TANKS. PROVIDE VALVES FOR EACH OF THE TWO TANKS.
 - 2) PROVIDE MOTORIZED BALL VALVES, 2" BODY, TO ALLOW THE MAIN TANK SELECTION FOR RETURNING TREATED FUEL TO THE MAIN TANK FROM THE FILTRATION PUMP SET. PROVIDE VALVES FOR EACH OF THE TANKS.
 - 3) PROVIDE MOTORIZED BALL VALVES, 2" BODY, TO ALLOW THE MAIN TANK SELECTION FOR RETURNING THE FUEL OIL FROM THE SYSTEM. PROVIDE VALVES FOR EACH OF THE TANKS.
 - 4) PROVIDE MOTORIZED BALL VALVES, 2" BODY, TO ALLOW THE MAIN TANK SELECTION FOR RETURNING RELIEF OIL FROM THE TRANSFER PUMP SET. PROVIDE VALVES FOR EACH OF THE TANKS.
 - 5) PROVIDE MOTORIZED BALL VALVES, 2" BODY, TO ALLOW MAIN TANK SELECTION FOR SUPPLYING FUEL OIL TO THE FUEL FILTRATION PUMP SET. PROVIDE VALVES FOR EACH OF THE TANKS.
 - 6) PROVIDE MOTORIZED BALL VALVES, 2" BODY, TO ALLOW MAIN TANK SELECTION FOR RETURNING TREATED FUEL TO THE MAIN TANK FROM THE FILTRATION PUMP SET.
 - 7) PROVIDE MOTORIZED BALL VALVES, 2" BODY, TO ALLOW MAIN TANK SELECTION FOR RETURNING RELIEF OIL FROM THE FUEL FILTRATION PUMP SET.
 - 8) PROVIDE MOTORIZED BALL VALVE, 2" BODY, TO ALLOW THE DRAINING OF THE FUEL OIL HEADER IN CASE OF FIRE IN THE GENERATOR ROOM.
 - 9) VALVES SHALL HAVE CARBON STEEL, 150 # CLASS, BODY, STAINLESS STEEL BALL AND STEM, PTFE SEATS AND STEM SEAL, AND FLANGED CONNECTIONS. VALVES SHALL BE WATTS 1501 OR APPROVED EQUAL.
 - 10) ELECTRIC ACTUATORS SHALL BE DESIGNED FOR 120 VAC POWER TO OPEN, POWER TO CLOSE FOR INTERFACE WITH THE MAIN CONTROL SYSTEM. ACTUATORS SHALL BE WATTS 700 OR APPROVED EQUAL.
 - K) PROVIDE FIRE SAFETY SHUTOFF VALVES WITH FUSIBLE LEVER HANDLES ON THE INLET LINES TO THE FUEL OIL TRANSFER PUMP SET, THE FUEL OIL TREATMENT PUMP SET AND ON THE SUPPLY PIPE BEFORE THE HEADER IN THE GENERATOR ROOM.
 - L) PROVIDE A FUEL OIL VENT PROTECTOR, 2" SIZE, ON THE VENT FOR THE HEADER.
 - M) PROVIDE A 2" VACUUM BREAKER IN THE VENT LINE.
3. MAIN TANK GAUGING AND LEAK MONITORING SYSTEM
 - A) PROVIDE AND INSTALL FOR EACH OF THE TWO (2) FUEL OIL STORAGE TANKS A TANK GAUGE AND LEAK MONITORING SYSTEM THAT CONTINUOUSLY INDICATES THE TANK CONTENTS AND MONITORS THE FOLLOWING: LOW LIQUID LEVEL, TANK LEAK (THREE POINTS PER TANK) AND TANK OVERFILL. SYSTEM SHALL BE EQUAL TO PREFERRED UTILITIES MODEL TG-EL-D3-ARF-NY.
 - B) FURNISH FOR EACH TANK A LEVEL TRANSDUCER TO INTERFACE WITH THE TANK GAUGE IN THE FUEL MANAGEMENT PANEL. LEVEL TRANSDUCER SHALL BE INTRINSICALLY SAFE, SHALL BE SEALED AGAINST TANK PRESSURE, ELECTRONICS SHALL BE SUBMERGED IN SLOTTED OIL FILL. UNIT SHALL ALLOW MECHANICAL TESTING OF HIGH LEVEL SETTING AND CALIBRATION OF GAUGE FROM TOP OF TANK WITHOUT WITHDRAWAL OF UNIT. ASSEMBLY SHALL BE DESIGNED FOR INSTALLATION IN TANK WALLS WITH AS LITTLE AS 24 INCHES OF HEAD ROOM ABOVE THE TANK. UNIT SHALL UTILIZE A MONING FLOAT ON A STAINLESS STEEL EXTENSION WIRE AND SHALL BE EQUAL TO PREFERRED UTILITIES MODEL TG-EL-WF.
 - C) PROVIDE A TOTAL OF ELEVEN (11) LEAK SENSORS FOR MONITORING OF THE MAIN FUEL TANK ROOM FLOOR AROUND THE FOUR (4) SIDES OF THE TANKS, ONE (1) IN THE SUMP PIT AND TWO (2) IN THE SUMP PANS.